Nutrient Adequacy Subcommittee (2010 Dietary Guidelines for Americans)

Overview, Needs for Future Research

Overview:

The Nutrient Adequacy Subcommittee (SC) addressed two major questions related to achieving the recommended intakes of nutrients:

- Folate intake and health outcomes in the US following mandatory folic acid fortification
- Selected dietary behaviors and nutrient intake.

A number of recently published, comprehensive, systematic reviews were available to inform the SC's review of several of its initial research questions.

Since January, 1998, the US Food and Drug Administration (FDA) has mandated the supplementation of all flour and uncooked cereal grains with folic acid, and the members of the SC have sought to evaluate the benefits and detrimental effects of the policy on the health of Americans. Because Canada has had a similar policy, the SC decided to include articles from Canada.

Meeting food and nutrient intake recommendations is challenging for many Americans. To gain an understanding of the depth and breadth of research in these areas, the SC conducted a series of exploratory literature searches. The exploratory searches helped the SC narrow the scope of its Nutrition Evidence Library (NEL) systematic reviews to the following three individual behaviors:

- Breakfast consumption
- Snacking
- Eating frequency.

The *Energy Balance and Weight Management Subcommittee* examined complementary questions relating to the effects of breakfast intake, snacking and eating frequency on energy balance and weight maintenance.

Needs for Future Research:

Nutrients and Dietary Components Over-consumed

1. Develop and test behavior-based interventions designed to lower dietary intakes of nutrients and dietary components that are over-consumed, focusing on solid fats and added sugars (SoFAS).

- **Rationale:** SoFAS contribute a substantial number of calories to the typical American diet without adding important micronutrients. Interventions that are proven successful in lowering dietary components that are over-consumed are needed to assist consumers and health care providers.

Food Groups and Selected Dietary Components Under-consumed

2. Conduct clinical trials in children and adults to critically examine the impact of adherence to the 2010 Dietary Guidelines for Americans as a total dietary approach to a healthy lifestyle on body weight change, cardiovascular disease (CVD), type 2 diabetes, cancer and osteoporosis and related clinical endpoints.

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Acknowledgements

- **Rationale:** Theoretically, food-based dietary guidance supports achievement of nutrient adequacy across age-sex groups. Total diets, including variation in eating and dietary patterns, compared to individual nutrients, have been insufficiently tested for their health outcome.

3. Quantitatively and qualitatively investigate how the food environment facilitates or hinders achievement of food groups and dietary components recommendations, notably in individuals enrolled in food assistance programs, particularly children participating in school breakfast and lunch programs and across various ethnic and cultural groups.

- **Rationale:** Compliance with dietary guidance is poor. Understanding the food environment at all levels will assist individuals and shape public policy toward intakes that meet recommendations for food groups and dietary components.

Vitamin D

4. Conduct high-quality, long-term dose-response studies with relevant health outcomes including bone, as well as functional outcomes related to the immune system, autoimmune disorders and chronic diseases such as coronary heart disease (CHD), hypertension (HTN), cancer and diabetes.

- **Rationale:** There is a need for additional research on the relation between threshold values of 25(OH)D and relevant functional outcomes at each life stage and in understudied populations.

5. Investigate the metabolic partitioning, fate and mobilization of key vitamin D metabolites at recommended and greater than recommended levels.

- **Rationale:** Studies that assess the availability of stored vitamin D, and relative contributions of endogenously produced and dietary vitamin D, and impact of important confounders, such as body weight and body fat on vitamin status are warranted (Brannon, 2008b).

Folate

6. Conduct studies on the long-term health impact of fortification on neural tube defects (NTDs), colorectal cancer (CRC), stroke, cognitive function and other health outcomes, such as emerging evidence suggesting that high folic acid intakes in some pregnant women may lead to asthma in their offspring (Whitrow, 2009), to fully understand the impact of this ecological experiment.

- **Rationale**: A substantial amount of time has elapsed since the US and Canada mandated folic acid fortification. Since 1998, many research studies have evaluated the benefits and risks of fortification. Much of the research demonstrated benefit, while some of the research has shown increased health risk. Further research is warranted.

Vitamin, Mineral, and Nutrient Supplements

7. Conduct studies on the precision in self-reported intakes of multivitamin/mineral supplements.

- **Rationale:** More than one-half of the population reports the use of nutrient supplements; however, the frequency and consistency of this use is sporadic for many. Greater accuracy in self-reported use of nutrient supplements is important to understanding short- and long-term health effects.

8. Develop accurate composition and bioavailability data across the multitude of vitamin, mineral and nutrient supplements. Evaluate outcomes based on nutrient composition and bioavailability within the multivitamin/mineral matrix.

- **Rationale:** Precise composition of supplements is critical to determining interactions of nutrients within each supplement preparation and potential benefits and risks of the matrix of nutrients from supplements consumed with foods.

9. Conduct randomized controlled trials that rigorously test health outcomes, including safety and risk assessments, of nutrient supplements in a diverse range of healthy population groups.

- **Rationale:** Research on the efficacy and safety of nutrient supplements is vital to the guidance of public policy recommendations, given that the majority of Americans use nutrient supplements at any point in time.

Nutrient Adequacy and Eating Behaviors

10. Convene a consensus panel to define breakfast, breakfast consumers and breakfast skipping; snacking; and eating frequency that can be consistently applied to studies.

- **Rationale:** Identifying healthful eating behaviors is important to primary prevention of chronic disease in Americans. Common definitions of specific eating behaviors are vital to testing and understanding the role of these behaviors in health and wellness.

11. Conduct longitudinal studies on the cumulative nutritional risks of breakfast skipping and health benefits of breakfast consumption. Identify critical components of breakfast and snacks, such as vegetables, fruits, whole grains and fluid milk and milk products, and their related health benefits.

- **Rationale:** Breakfast intake is associated with positive outcomes such as improved school performance among children. Further understanding of other nutrition-related health benefits is needed.